REMARKS

In response to the Office Action mailed August 5, 2008, Applicant respectfully requests reconsideration. Claims 1-21, 23-39 and 41-45 were previously pending in this application. No claims have been added, amended or canceled herein. As a result, claims 1-21, 23-39 and 41-45 remain pending for examination with claims 1, 8, 13, 25, 26, and 27 being independent.

Rejections Under 35 U.S.C. §102

The Office Action rejected independent claims 1 and 26 under 35 U.S.C. §102 as purportedly being anticipated by Switsen, U.S. Patent No. 3,598,889. The Office Action cites a portion of a textbook by Boylestad to support the Office Action's inherency rationale. Applicant respectfully traverses these rejections.

1. Discussion of Cited References

A. Switsen

Switsen states that musical entertainment can be enhanced by selectively energizing several lights of different colors based on the frequency of music being played (Col. 1, lines 9-12). Switsen describes turning on a first light when low frequency music is being played, and a second light when high frequency music is being played. (Col. 1, lines 11-14). FIG. 1 of Switsen shows a circuit for selectively turning on various lights in response to a music input signal. Lamp 10 is connected to power input 16 and also to SCR 20. SCR 20 is used for turning on the lamp 10 in response to music input signal 14 (Col. 1, lines 50-53, Col. 2, lines 32-64). A high pass filter 26 filters the music input signal so that primarily high frequency signals are applied to the gate of SCR 20, which causes SCR 20 to be turned on in response to music of a high frequency, rather than music of a low frequency (Col. 2, lines 50-64). Switsen states that SCR 20 turns on when the gate voltage is above the SCR's firing voltage (Col. 3, lines 38-43, Col, 2, lines 38-45). When the high frequency music is loud enough, the music input signal has a voltage above about 1 volt, which causes the SCR to turn on, and current flows through SCR 20 to illuminate lamp 10 (Col. 3, lines 38-43).

B. Boylestad

The Boylestad textbook describes the presence of transition capacitance and diffusion capacitance within a silicon diode (p. 30). Boylestad states that the transition capacitance dominates over the diffusion capacitance when the diode is reverse-biased, and the diffusion capacitance dominates when the diode is forward-biased (p. 30, FIG. 1.33). FIG. 1.34 of Boylestad shows that both of these capacitances can be modeled as a capacitor in series with an ideal diode (p. 31).

2. The Claims Distinguish Over Switsen

Independent Claim 1

Claim 1 recites, *inter alia*, that an accumulated effect on the SCR-type switch of applying the several periods in succession is to start the SCR-type switch, a power of each halfwave of the several periods being individually insufficient to start the SCR-type switch. Switsen does not teach or suggest that a power of each halfwave is individually insufficient to start an SCR-type switch, and that an accumulated effect of applying several periods in succession is to start the SCR-type switch. Rather, Switsen's SCR 20 turns on when the received music input signal is higher than 1 volt. When the music is loud, the received music signal has a voltage above 1 volt, which triggers the SCR to turn on (Col. 3, lines 38-43).

Switsen does not disclose that the music input signal has a "period" or a "halfwave," and it is unclear how these limitations are met by Switsen's music signal. In Switsen, there is no disclosure that a power of each halfwave is individually insufficient to start the SCR-type switch because no halfwave is disclosed by Switsen. Switsen's SCR 20 turns on in response to receiving a music input signal with a voltage higher than 1 volt, not in response to "an accumulated effect of applying several periods in succession."

The Office Action states that the limitation "an accumulated effect on the SCR-type switch of applying the several periods in succession is to start the SCR-type switch" is purportedly inherent in Switsen's device because of the presence of an emitter-base junction capacitance. Applicant respectfully disagrees because this is not how Switsen's SCR turns on. In Switsen's device, it is the voltage of the received music input signal that turns on the SCR (Col. 3, lines 38-43). Switsen's

SCR is not turned on in response to an "accumulated effect of applying several periods in succession" because Switsen's SCR simply turns on in response to receiving a voltage higher than 1 volt (Col. 3, lines 38-43).

The Office Action's reliance on Boylestad is improper because Boylestad describes capacitances present in a semiconductor diode, not an SCR. One of ordinary skill in the art would appreciate that Switsen's SCR is different from a semiconductor diode because Switsen's SCR has three terminals, yet Boylestad's silicon diode has only two terminals. Boylestad's silicon diode lacks the gate terminal of Switsen's SCR, which receives the music input signal that controls Switsen's SCR. The Office Action cites Boylestad for the idea that an "accumulated effect" is present at the gate of Switsen's SCR that causes the SCR to turn on. However, unlike Switsen's SCR, Boylestad's silicon diode does not have a gate terminal. Boylestad does not disclose an "accumulated effect" being present at the gate of an SCR because Boylestad's silicon diode has no gate terminal.

The Office Action relies upon Boylestad for the idea that parasitic capacitances are inherently present in Switsen's SCR. The Office Action cites further references for this idea, including Durmont (4,459,531), Yakushiji (4,982,259), and Croft (5,546,038). However, even assuming for the sake of argument that parasitic capacitances existed in Switsen's SCR, this does not mean that an accumulated effect of applying several periods in succession is to start the SCR. To meet the standard of inherency (MPEP 2112), the Office Action must show that the claim limitation necessarily flows from the teachings of the prior art. This standard has not been met in the present case because the mere presence of capacitance within a switch does not mean that an accumulated effect is created to start the switch.

In addition to these deficiencies, the Office Action relies upon Boylestad for much more than just the presence of parasitic capacitances, to an extent that is beyond Boylestad's disclosure. Page 3 of the Office Action states reasons that an "accumulated effect" purportedly is inherently present in Switsen's SCR.

> According to Boylestad et al., with a forward (positive) bias the junction has a substantial value of a diffusion capacitance while a reverse (negative) bias it has much smaller value of a depletion capacitance. Since the capacitance is non-linear and dependent on a value of an applied signal, the junction is capable of

> accumulating predominantly positive charges due to its larger capacitance and therefore larger charge storage capability.

Applicant respectfully disagrees because Boylestad does not disclose that the diode's junction accumulates predominantly positive charge. It is unclear from a technical perspective as to why Boylestad's capacitance would accumulate predominantly positive charges as the Office Action contends. This conclusion is in no way suggested by Boylestad.

The Office Action further concludes that the junction of Boylestad's silicon diode produces a DC bias, based on the purported accumulation of positive charges. The Office Action states:

> The bipolar wave of the high frequency signal becomes DC biased due to accumulation of positive charges in the emitter-base junction of the SCR, a peak value of the signal wave rises higher.

Applicant respectfully disagrees because no such disclosure is found in Boylestad. Neither Switsen nor Boylestad makes any mention of a "bipolar wave," or a DC bias being created within an SCR. Again, it is unclear from a technical perspective as to why a DC bias would be created within an SCR, and Boylestad does not suggest this idea. Furthermore, Office Action's statement regarding the high-frequency signal is inconsistent with the physical structure of Boylestad's device, which does not have an "emitter-base junction" because it is a silicon diode which has no base, nor a gate terminal to receive the music input signal that controls Switsen's SCR. Because Boylestad's silicon diode lacks a gate terminal, Boylestad's diode does not receive "several periods of an unrectified high frequency voltage in succession, such that an accumulated effect on the SCR-type switch of applying the several periods in succession is to start the SCR-type switch." Boylestad does not support the idea that an "accumulated effect" is inherently present because Boylestad's diode does not have a gate terminal to receive Switsen's music signal.

Contrary to the Office Action's inherency rationale regarding the purported creation of an "accumulated effect" within Switsen's SCR, Switsen states that the SCR 20 turns on simply when the gate receives a voltage higher than 1 volt (Col. 3, lines 38-43). Based on Switsen's disclosure, one of ordinary skill in the art would appreciate that Switsen's SCR turns on in response to receiving a music input signal of sufficient voltage, not in response to an accumulated effect of

applying several periods of a high frequency voltage in succession. For these reasons, claim 1 patentably distinguishes over Switsen. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 2-7 depend from claim 1 and are patentable for at least the same reasons.

Independent Claim 26

Claim 26 recites, *inter alia*, that the SCR-type switch is turned on in response to an accumulated effect of a plurality of halfwaves of the high-frequency control voltage but is not turned on in response to an effect of an individual one of the plurality of halfwaves. As should be appreciated from the above discussion with respect to claim 1, Switsen does not teach or suggest an SCR-type switch that is turn on in response to an accumulated effect of a plurality of halfwaves of the high-frequency control voltage but is not turned on in response to an effect of an individual one of the plurality of halfwaves. Rather, Switsen's SCR is turned on in response to receiving a music input signal that has a voltage above 1 volt. For these reasons, claim 26 patentably distinguishes over Switsen. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. §103

I. The Office Action rejected independent claims 8 and 13 under 35 U.S.C. §103(a) as purportedly being unpatentable over Switsen, U.S. Patent No. 3,598,889 in view of Iwamuro et al., U.S. Patent No. 6,091,087. Applicant respectfully traverses these rejections.

Independent Claim 8

Claim 8 recites, *inter alia*, an SCR-type switch component that is configured such that the SCR-type switch component is not turned on in response to an individual one of the several periods, wherein the SCR-type component is configured such that an accumulated effect of applying the several periods in succession causes the SCR-type switch to turn on. The Office Action relies upon Switsen as purportedly describing these limitations. However, as should be appreciated from the above discussion with respect to claim 1, Switsen does not teach or suggest an SCR-type switch component configured such that an accumulated effect of applying the several periods in succession

causes the SCR-type switch to turn on. Rather, Switsen's SCR is turned on in response to receiving a music input signal that has a voltage above 1 volt. Iwamuro fails to remedy this deficiency of Switsen. For these reasons, claim 8 patentably distinguishes over Switsen. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 9-12 depend from claim 8 and are patentable for at least the same reasons.

Independent Claim 13

Claim 13 recites, *inter alia*, providing, to a control terminal of the SCR-type switch, a high-frequency control voltage that controls the SCR-type switch without supplying current from the control terminal to a starting area of the SCR-type switch, wherein the high-frequency control voltage comprises a plurality of halfwaves, wherein the SCR-type switch is turned on in response to an accumulated effect of the plurality of halfwaves, an individual one of the plurality of halfwaves being of insufficient intensity and/or duration to start the switch by itself. As should be appreciated from the above discussion with respect to claim 1, Switsen fails to teach or suggest an SCR-type switch that is turned on in response to an accumulated effect of a plurality of halfwaves. Iwamuro fails to remedy this deficiency of Switsen. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 14-21, 23 and 24 depend from claim 13 and are patentable for at least the same reasons.

II. Claim 25

The Office Action rejected independent claim 25 under 35 U.S.C. §103(a) as purportedly being unpatentable over Switsen, U.S. Patent No. 3,598,889 in view of Iwamuro et al., U.S. Patent No. 6,091,087 and the Hui et al. article entitled "Cordless Transformers for Power MOSFET/IGBT Gate Drive Circuits." Applicant respectfully traverses these rejections.

The Office Action states that Switsen's circuit operates with a frequency no higher than tens of megahertz. However, the Office Action states that it would have been obvious to modify Switsen's circuit to operate above 1 MHz based on purportedly desirable properties Iwamuro's isolation transformer at these frequencies. Applicant respectfully disagrees. Switsen's circuit uses a

filtered music signal to control an SCR to turn on a light when the music is in a certain frequency range, which Switsen states enhances the entertainment value of the music. However, one of ordinary skill in the art would appreciate that music is an audio signal that has a frequency between about 15 Hz and 20 kHz (Merriam-Webster's Dictionary, Definition of "Audio"). One of ordinary skill in the art would not have increased the frequency of the music signal above about 20 kHz because the human ear cannot hear frequencies above this range. Increasing the frequency of the music signal nearly three orders of magnitude to over 1 MHz would cause the music to be inaudible, thus defeating Switsen's intended purpose of providing musical entertainment. The modification to Switsen is therefore improper.

Even if the combination were proper (which it is not), claim 26 patentably distinguishes over the combination. Claim 25 recites, *inter alia*, wherein a duration of a single halfwave of the high frequency control signal is insufficient for the single halfwave to turn on the SCR-type switch. As should be appreciated from the above discussion of claim 1, Switsen does not teach or suggest that a duration of a single halfwave of a high frequency control signal is insufficient for a single halfwave to turn on the SCR-type switch. Rather, Switsen states that a received music signal with a voltage over 1 volt will turn on the switch. Iwamuro and Hui fail to remedy this deficiency.

For these reasons, claim 25 patentably distinguishes over the combination. Accordingly, withdrawal of this rejection is respectfully requested.

III. Independent Claim 27

The Office Action rejected independent claim 27 under 35 U.S.C. §103(a) as purportedly being unpatentable over Switsen, U.S. Patent No. 3,598,889 in view of Bhagat, U.S. Patent No. 4,630,092. Applicant respectfully traverses this rejection.

Claim 27 recites, *inter alia*, an SCR-type switch that is turned on in response to an accumulated effect of a plurality of halfwaves of the high-frequency control voltage. As should be appreciated from the above discussion with respect to claim 1, Switsen does not teach or suggest an SCR-type switch that is turned on in response to an accumulated effect of a plurality of halfwaves. As discussed above, Switsen's SCR turns on in response to response to receiving a music input signal greater than 1 volt, not in response to an accumulated effect. Bhagat fails to remedy this

deficiency. Therefore, claim 1 patentably distinguishes over the combination. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 28-39 and 41-43 depend from claim 27 and are patentable for at least the same reasons.

CONCLUSION

In view of the foregoing, the present application is believed to be in condition for allowance. A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

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Respectfully submitted,

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